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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/045,316	11/07/2001	Hiroki Nakamaru	1321-01	7966

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IP GROUP OF DLA PIPER RUDNICK GRAY CARY US LLP  
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EXAMINER

HERTZOG, ARDITH E

ART UNIT PAPER NUMBER

1754

DATE MAILED: 04/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Cn

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/045,316	NAKAMARU ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Ardith E. Hertzog	1754	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 17 January 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1,5-9 and 13-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,5-9 and 13-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1,5-9 and 13-21 are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### ***Continued Examination Under 37 CFR § 1.114***

1. A request for continued examination under 37 CFR § 1.114, including the fee set forth in 37 CFR § 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR § 1.114, and the fee set forth in 37 CFR § 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR § 1.114. Applicant's submission (i.e., "Amendment") filed January 17, 2006 has been entered. Claims 1, 5-9 and 13-21, per said amendment, are pending.

### ***Priority***

2. Acknowledgement is made of applicant's claim for foreign priority based on two applications filed in Japan on November 15, 2000 (JP 2000-347869) and October 5, 2001 (2001-310454). **However**, a review of all papers in this IFW application reveals that **only** the actual claim, certification and cover sheet for each application have been received. **Accordingly, complete** certified copies of **both** applications are now required for compliance with 35 U.S.C. § 119(b).

### ***Information Disclosure Statement***

3. Receipt is acknowledged of the information disclosure statement (IDS) filed **February 13, 2003**. As the submission is in compliance with the provisions of 37 CFR §

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1.97, the IDS has been considered, per the enclosed PTO-1449.

***New Matter***

4. The amendment filed **March 9, 2004** is objected to under 35 U.S.C. § 132(a), because it introduces new matter into the disclosure. 35 U.S.C. § 132(a) states that no amendment shall introduce **new matter** into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: the revisions to Table 1—namely, revising Example 1 as “Comparative Example 3” and Examples 7 and 8 as, respectively, “Comparative” Example 7 and “Comparative” Example 8. Clearly, the originally filed disclosure **only** supports the description of Examples 1, 7 and 8 (per Table 1, as originally filed) as within the scope of applicant’s invention, rather than “Comparative” (see paragraphs [0065]-[0066] at p. 20 of the specification). **Applicant is required to cancel the new matter in any reply to this Office Action.**

***Minor Informalities***

5. The disclosure is objected to, because of the following minor informalities: Given that Table 1 requires revision, per the new matter objection above, it is suggested that “preciritation” be corrected as “precipitation” (see “Degree of...” column heading) when revising same.

***Claim Rejections - 35 U.S.C. § 112***

6. The following is a quotation of the first paragraph of 35 U.S.C. § 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claim 17 is rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. It is respectfully submitted that the claim contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. In particular, while applicant's remarks that new claim 17 finds basis in paragraph [0060] and Table 1 have been carefully considered, it is still not seen where the originally filed disclosure provides proper antecedent basis for "10 **or more** in a unit of number of particles per  $250\ \mu\text{m}^2$ " (emphasis added), as recited therein. That is, the phrase "10 or more" is considered broader in scope than what is disclosed in Table 1—namely, **specific** values of 10, 20 and 30 for this parameter. It is respectfully disagreed that these specific values provide sufficient basis for "10 or more", since this phrase is an **open-ended** range encompassing, literally, **any** value above 10. Appropriate correction is required.

8. The following is a quotation of the second paragraph of 35 U.S.C. § 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 1, 5-9 and 13-21, are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Said claims are considered vague, indefinite, and/or confusing, due to antecedent basis problems in each of independent claims 1, 13 and 18. Specifically, there is insufficient antecedent basis for the phrase

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“as **the** composition” (emphasis added)—note that **no** “composition” is earlier recited in any of these claims. In this regard, the following remarks by applicant have been carefully considered:

Claim 1 as amended recites an “iron powder containing about 0.1 to about 2% by mass of sulfur and about 0.06% by mass or less of manganese as the composition, based on the mass of the iron powder.” What this means to those of ordinary skill in the art is that the iron powder particles contain the claimed percentage by mass of sulfur and the claimed percentage of mass of manganese in addition to iron, as the composition that forms the iron powder particles. Said differently, the particles or powder is of a *composition* that contains iron, the claimed amount of sulfur and the claimed amount of manganese. (remarks accompanying amendment at p. 6, emphasis original)

**Thus**, in light of the above disclosure by applicant, it appears that the phrase “as the composition” is **not necessary** in the claims; that is, the claim 1 recitation of “...iron powder particles containing about 0.1 to about 2% by mass of sulfur and about 0.06% by mass or less of manganese, based on the mass of the iron powder...” already **requires** that the “powder particles” (i.e., a composition of same) contain the recited amount(s) of sulfur and optionally manganese. **Accordingly**, deleting “as the composition” from **each of** claims 1, 13 and 18, **as well as** “of the composition” from **each of** claims 14, 16 and 18 would be one means of overcoming this rejection.

**Alternatively**, claim 1 could be revised to recite “...iron powder particles, said particles present as a composition containing about 0.1 to about 2% by mass of sulfur and about 0.06% by mass or less of manganese, based on the mass of the composition, wherein...”, and **each of** claims 13 and 18 could be similarly revised. Appropriate correction is required.

***Response to Arguments***

10. Applicant's arguments filed January 17, 2006, in regards to the prior art rejections of the claims set forth in the prior Office action (i.e., the final rejection mailed July 13, 2005, hereinafter "the 7/13/05 action"), have been carefully considered and found **persuasive**—see "Remarks" accompanying amendment, beginning with page 5, last full paragraph, through page 12, last paragraph, **expressly incorporated by reference herein. Accordingly, all** prior art rejections set forth in the 7/13/05 action have been **withdrawn**.

***Allowable Subject Matter***

11. Claims 1, 5-9 and 13-21 would be allowable **if** rewritten/amended to overcome the rejection(s) under 35 U.S.C. § 112, first and/or paragraph, set forth in this Office action. As just discussed, applicant's amendment and/or arguments are considered **sufficient** to overcome the **closest** prior art of record—the Hassan article (Hassan), US 6,039,882 (Wolfe et al.), JP 07-278825 (JP '725) and US 5,938,814 (Uenosono et al.). **Hence**, as the prior art of record fails to teach or to have suggested methods of remediating media contaminated with halogenated hydrocarbons comprising, at the least, the **specific** steps recited in instant independent claim 13 (i.e., the broadest of applicant's independent claims)—**in particular**, formation of Fe-S based inorganic compounds mainly comprising sulfur on at least portions of surfaces of iron powder by precipitation of sulfur in said iron powder, said iron powder containing about 0.1 to about 2% by mass of sulfur and about 0.1% by mass or less manganese, based on the mass

of said powder—all instant claims are considered to contain allowable subject matter over this prior art.

### ***Conclusion***

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. These references are considered cumulative to or less material than those discussed above/previously made of record. Note that US 6,217,779 is equivalent to the previously cited WO 97/04868, and US 6,287,472 is equivalent to the previously cited WO 97/14656. The remaining references on the enclosed PTO-892 correspond to documents present in this IFW application which had not yet been made of record on a PTO-1449 and/or PTO-892.

13. Any inquiry concerning this communication should be directed to Ardith E. Hertzog at 571-272-1347. The examiner can normally be reached on Monday through Friday (from about 7:30 a.m. - 3:30 p.m.).

14. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley S. Silverman, can be reached at 571-272-1358. The central fax number for all communications is now 571-273-8300.

15. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. For any



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questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to be 'AEH', written over the printed name 'AEH'.

March 23, 2006

A handwritten signature in black ink, appearing to be 'Stanley S. Silverman', written over the printed name 'STANLEY S. SILVERMAN'.

**STANLEY S. SILVERMAN**  
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**Facsimile****Date:** March 21, 2006**To:****Phone:****Fax:**

Examiner Ardith Hertzog  
USPTO

571-273-1347

Original ☐ will / ☒ will not follow.

Pages (including fax sheet): 3

**Comments:**

Serial No. 10/045,316  
Our Ref.: 1321-01

Attached are Comparison Figs. A and B for the Amendment filed on January 13, 2006.

**PC12874/312522-000020**

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Piper Rudnick LLP

312522-2

## Expreimental Conditions

	This Invention (Table 1)		Hassan (Table 1)	
Initial VOC	5mg/L	[0063]	Not Disclosed	-
capacity of a vial	100mL	-	120mL	Item 2.1
amount of aqueous	50mL	[0063]	100mL	Item 2.1
amount iron powder	5g	[0063]	2g	Item 3.3
aquaous phase /iron	10L·kg <sup>-1</sup>	(calculated)	50L·kg <sup>-1</sup>	(calculated)

## Results in This Invention (Table 1)

S content	(mass%)	0.03	0.1	0.2	0.4	0.94
rate constant of dehalogenation	per hour (hr <sup>-1</sup> )	0.01	0.04	0.06	0.07	0.09
	per day (d <sup>-1</sup> )	0.24	0.96	1.44	1.68	2.16
	compensated by aqua/powder (L·d <sup>-1</sup> ·kg <sup>-1</sup> )	2.4	9.6	14.4	16.8	21.6

## Results in This Hassan (Table 1)

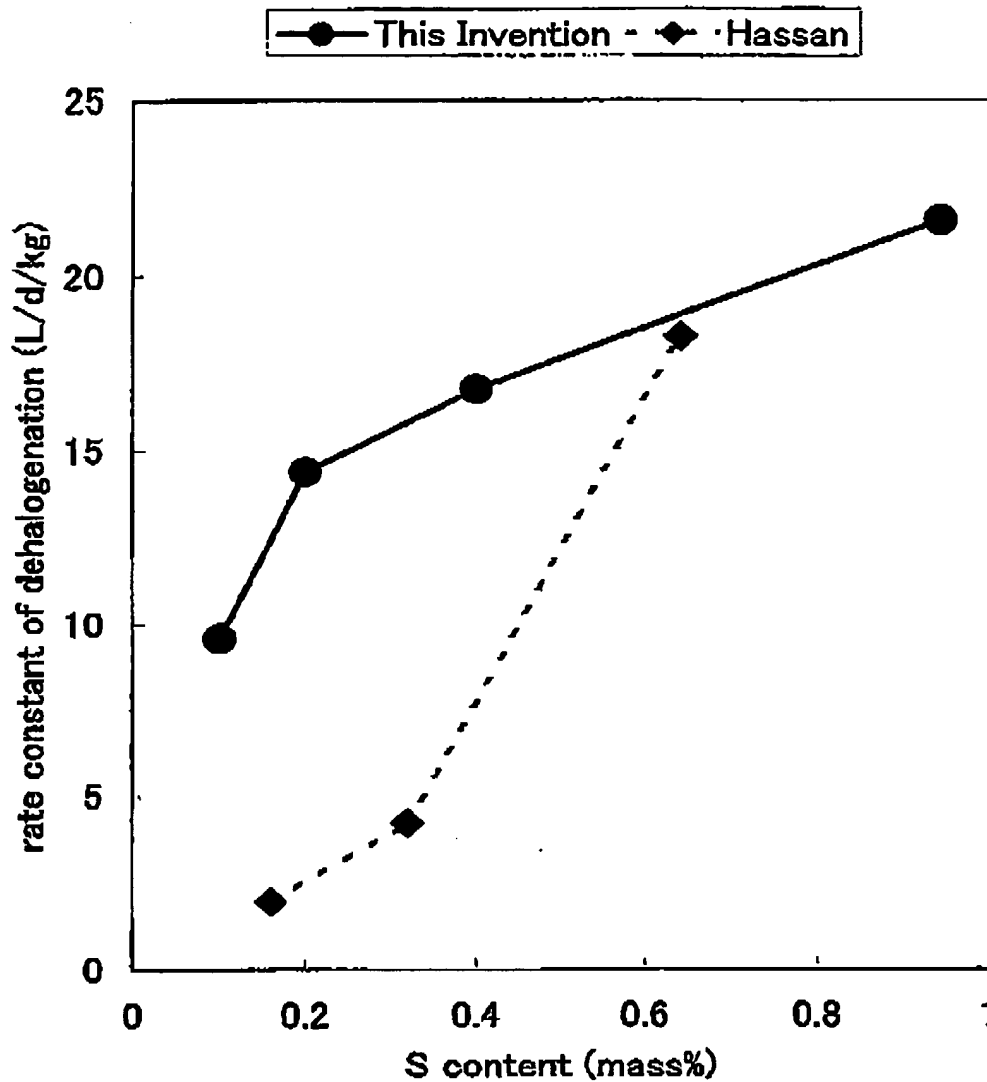
concentration of NaSH	mM/L	0	1	2	4
S content*	(mass%)	0	0.16	0.32	0.64
rate constant of dehalogenation	per day (d <sup>-1</sup> )	0	0.0396	0.0845	0.3663
	compensated by aqua/powder (L·d <sup>-1</sup> ·kg <sup>-1</sup> )	0	1.98	4.225	18.315

\*calucrated assuming that every S in NaSH has been depoited on the iron powder particle

VOC: volatile organic compound

L: litter

Comparison Fig. A



Comparison Fig. B